

Site Investigation
Final
Site-Specific Field Sampling Plan Attachment
for the Drain Field (Building T-459), Parcel 236(Q)

Fort McClellan
Calhoun County, Alabama

Prepared for:

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Task Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645

December 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DOE	Directorate of Environment
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
PPE	personal protective equipment
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
TCL	target compound list
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Task Order CK005, IT Corporation (IT) will conduct a site investigation at Fort McClellan, Calhoun County, Alabama, at the Drain Field (Building T-459), Parcel 236(Q) site to determine the presence or absence of potential site-specific chemicals at this site. This site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the Drain Field, Parcel 236(Q) site.

A drain field is located between Building T-459 and 10th Street. This drain field and associated septic tank is used for domestic sewage from Buildings T-407 (classrooms), T-406 (latrine), and associated buildings. The system is believed to have been constructed in the 1940s and remains active.

Parcel 236(Q) covers an area approximately 1.7 acres in size. The parcel is densely covered with trees and ground cover which prohibited exact location of the drain field and septic tank during the walk-over.

IT will collect two surface soil samples, two subsurface soil samples, and two groundwater samples during the site investigation. Samples will be analyzed for a range of parameters including volatile organic compounds, semivolatile organic compounds, total target analyte list metals, chlorinated pesticides, chlorinated herbicides, and organophosphorus pesticides. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Drain Field (Building T-459), Parcel 236(Q) site will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies for the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Drain Field (Building T-459), Parcel 236(Q) site under Task Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Drain Field (Building T-459), Parcel 236(Q) (Figure 1-1). IT will collect surface soil samples, subsurface soil samples, and groundwater samples as part of the SI to determine if potential site-specific chemicals (PSSC) are present at the site. The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Drain Field (Building T-459), Parcel 236(Q) site, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan (QAP).

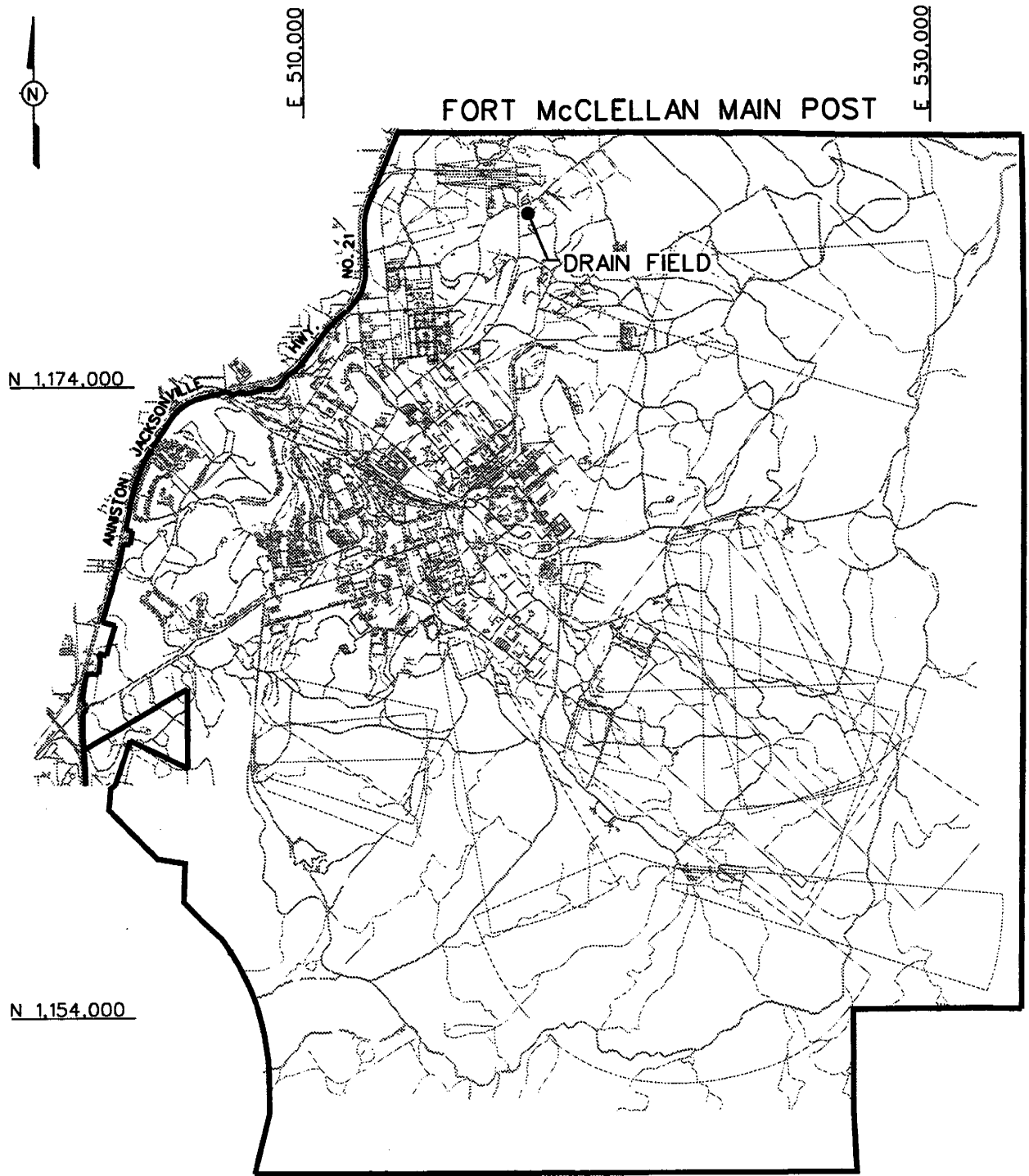
1.2 Site Description

Parcel 236(Q) is located on the northern portion of the Main Post south of the eastern end of Reilly Airfield (Figure 1-2). The site is a septic system with a drain field located between Building T-459 and 10th Street. This system was used for domestic sewage from Buildings T-407 (classrooms), T-406 (latrine), and associated buildings (T-449, T-451, T-452, T-461, and T-459). This septic system is believed to have been constructed in the 1940s and remains active.


Parcel 236(Q) is located just south of the eastern end of Reilly Airfield and southeast of the intersection of 10th Street and an unnamed road leading east to the POW training facility. The parcel is approximately 1.7 acres covered with dense trees and groundcover. The dense foliage prevented the walk-over team from observing the exact drain field and septic tank location reported in the environmental baseline survey (EBS). The area south of the parcel is wooded, and the west side is bound by 10th Street. An unimproved, almost overgrown road and a cleared area (approximately 1 acre) are in the center of the area designated as the location of the septic system. The remains of one building were observed to the east of the unimproved road. The

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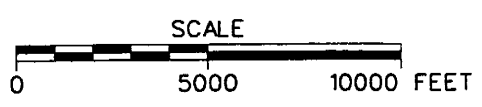
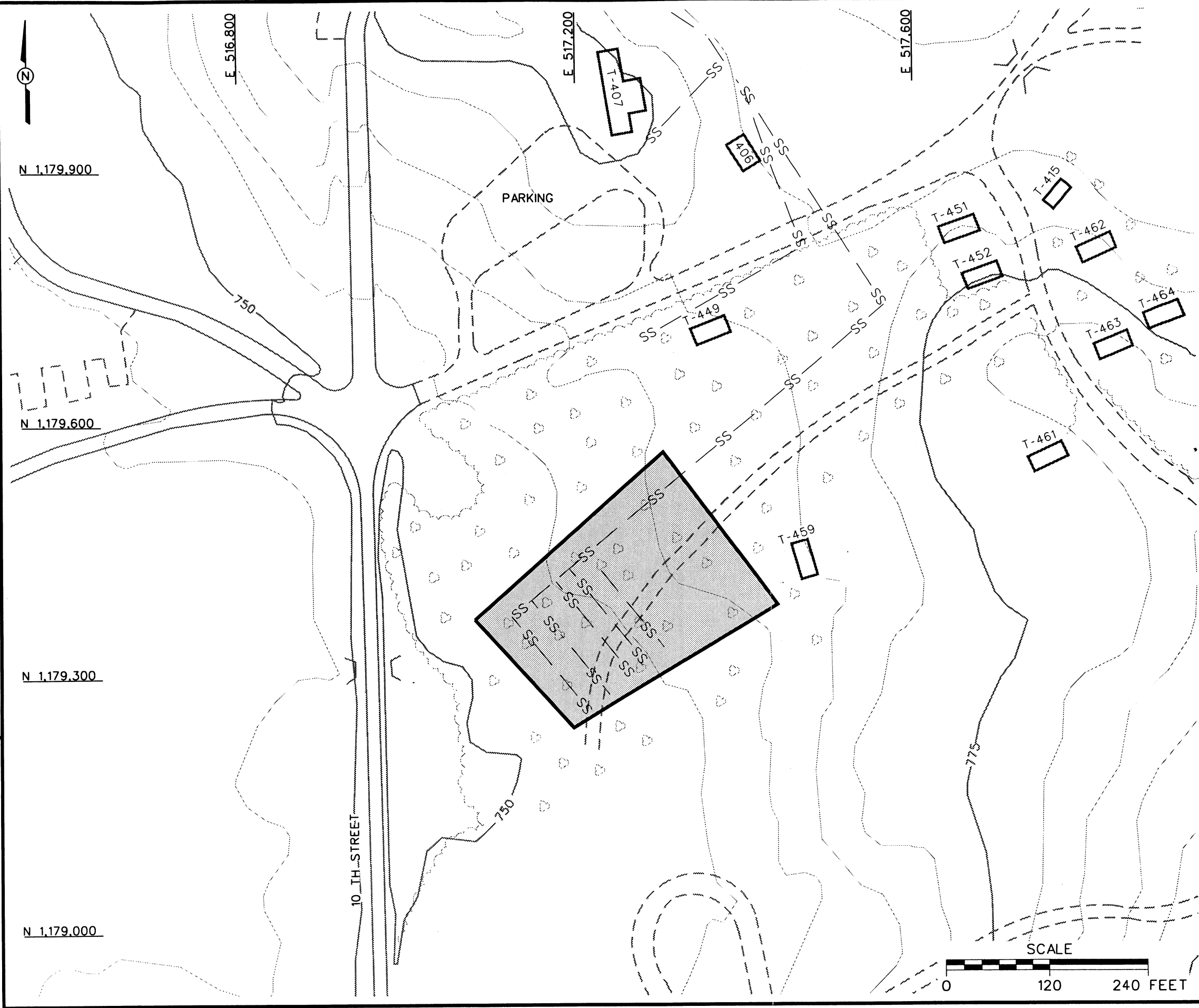


FIGURE 1-1
SITE LOCATION MAP
DRAIN FIELD
PARCEL 236(Q)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018





LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- TREES / TREELINE
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SANITARY SEWER LINE
- STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
DRAIN FIELD
PARCEL 236(Q)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

SCALE
0 120 240 FEET

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

remains were almost overgrown with vines and foliage. Major surface drainage features were not seen. Ground surface slopes toward the west-northwest except from the north side of the parcel where the ground slopes toward 10th Street. A small cleared area (less than .25 acre) was noted adjacent to the intersection of 10th Street and the unimproved road (northwest corner of the area).

The entire area is covered with the Cumberland gravelly loam, 2-6 percent slopes, eroded type soil (CoB2). The surface soil ranges from very dark brown to reddish brown. The subsoil ranges from dark red to red and from silty clay loam to clay in texture. The thickness of the alluvium ranges from 2 to 15 feet or more. In some areas, this soil is underlain by beds of gravel or sand. Infiltration is medium, permeability is moderate, and the capacity for available moisture is high. Runoff is medium and is a slight hazard. These soils have developed in old general alluvium that washed from soils derived mainly from limestone and cherty limestone, and to some extent, shale and sandstone. Rounded chert, sandstone, and quartzite gravel, as much as 3 inches in diameter, are on and in the soil. Depth to water is greater than 20 feet and depth to bedrock is from 4 to greater than 20 feet. Elevation at the site ranges from approximately 750 to 760 feet. (U.S. Department of Agriculture, 1961).

A review of available information (Water in Alabama, 1990, and Groundwater Availability in Calhoun County, Alabama, 1992, Geological Survey at Alabama) indicates there are no potable wells within a 1-mile radius of the drain field.

1.3 Scope of Work

The scope of work for activities associated with the Drain Field, Building T-459, Parcel 236 (Q), specified in the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect two surface soil samples, two subsurface soil samples, and two groundwater samples at the site to determine if PSSC are present and provide data useful in any future planned corrective measures.

At the completion of the field activities and sample analyses, draft and final reports will be prepared to evaluate the absence or presence of contaminants at this site, and to recommend further remedial action, if appropriate. Reports will be prepared in accordance with current U.S.

Environmental Protection Agency (EPA) Region IV and the Alabama Department of Environmental Management (ADEM) requirements.

2.0 Summary of Previous Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted in an effort to document past operations and activities at the site. In addition, visual site inspections were conducted to verify conditions of specific property parcels. The parcel does not have a history of environmental hazards, such as asbestos, radon, lead-based paint, radionuclides, unexploded ordnance, PCBs, or chemical warfare materials (CWM). The Drain Field (Building T-459), Parcel 236(Q) site was identified as a site where further evaluation is needed. Previous environmental studies have not been conducted at this site.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Drain Field (Building T-459), Parcel 236(Q). This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund, Interim Final Guidance* (EPA, 1993). The DQO process as applied to the Drain Field (Building T-459), Parcel 236(Q) is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, the procedures necessary to meet the objectives of the site investigation, and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory in Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the site investigation at the Drain Field (Building T-459), Parcel 236(Q), presented in Table 3-1, have been used to formulate a site-specific conceptual model presented in Section 3.3 below. This conceptual model was developed to support the preparation of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual PSSC in the site media.

Table 3-1

**Summary of Data Quality Objectives
Drain Field, Building T-459, Parcel 236(Q)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	<u>Contaminant Source</u> Septic system	Surface soil	SI to confirm whether PSSC are present at the site. Definitive quality data for future decision making	<u>Surface soil</u> TCL VOCs TCL SVOCs Total TAL metals CI and OP pesticides CI herbicides.	Definitive data and CESAS Level B	2 direct-push + QC
		<u>Migration Pathways^a</u> Infiltration and leaching through subsurface soil to groundwater. Dust emissions and volatilization to air.	Subsurface soil		<u>Subsurface soil</u> TCL VOCs TCL SVOCs Total TAL metals CI and OP pesticides CI herbicides.	Definitive data and CESAS Level B	2 direct-push + QC
		<u>Potential Receptors</u> Groundskeeper (future) Construction worker (future) Recreational user (current and future) Resident (future) <u>PSSC</u> VOCs Metals Pesticides Herbicides	Groundwater		<u>Groundwater</u> TCL VOCs TCL SVOCs Total TAL metals CI and OP pesticides CI herbicides.	Definitive data and CESAS Level B	2 direct-push + QC

^aAlthough groundwater is the only media of concern, subsurface soil is a plausible contaminant source and pathway of concern for the construction worker.

ADEM - Alabama Department of Environmental Management.

CESAS - Corps of Engineers South Atlantic Savannah.

CI - Chlorinated.

DOD - U.S. Department of Defense.

EPA - U.S. Environmental Protection Agency.

OP - Organophosphorus.

PSSC - Potential site-specific chemicals.

QC - Quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target Compound list.

TOC - Total organic carbon.

USACE - U.S. Army Corps of Engineers.

VOC - Volatile organic compound.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating potential risks to human health in a risk assessment. The CSEM includes all plausible receptor scenarios and potential exposure pathways. The CSEM graphically presents all possible pathways, by which a potential receptor may be exposed, including all sources, release and transport pathways, and exposure routes. In addition, it facilitates consistent and comprehensive evaluation of human health risks, and helps ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptor scenarios
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with contaminated source media.

Parcel 236(Q) is a densely vegetated area south of the eastern end of Reilly Airfield that is scheduled for reuse as part of an industrial park. The area is not currently active and there is no reason to suspect the presence of contamination in the subsurface soil associated with the drain field. However, there is always a remote possibility that toxic chemicals were dumped into the sewage system, and remain in subsurface soil and groundwater. The water table is located approximately 20 feet below the surface at this location. Thus, it is highly unlikely that contaminated leachate from the drain field would be found in the underlying groundwater, although this pathway remains in the CSEM, pending additional data. The only potential contaminant transport pathways identified at this site are infiltration through subsurface soil to groundwater, and dust emissions and volatilization from soil to air.

The following plausible, but unlikely receptors are identified in the CSEM:

- The *resident* scenario is considered for future purposes only, because there are currently no residents present at the site.
- The *groundskeeper* scenario is considered for future purposes only, because the site is currently not maintained by a groundskeeper.
- The *construction worker* scenario is considered for future purposes only, because the site is currently not under construction.

- The *recreational site user* scenario, which includes hunting, youthful and other intruders, hikers, campers and other recreational users is considered for both current and future purposes, although whether the site is currently used for any of these activities has not been ascertained.
- The *venison and fish consumption* scenarios are excluded, because the site does not drain into a body of water suitable for fishing, and a surface contamination pathway that could lead to secondary exposure related to ingestion of contaminated vegetation by deer is not present.

A summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptors and exposure pathways is presented in Table 3-1 and Figure 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Drain Field (Building T-459), Parcel 236(Q). Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

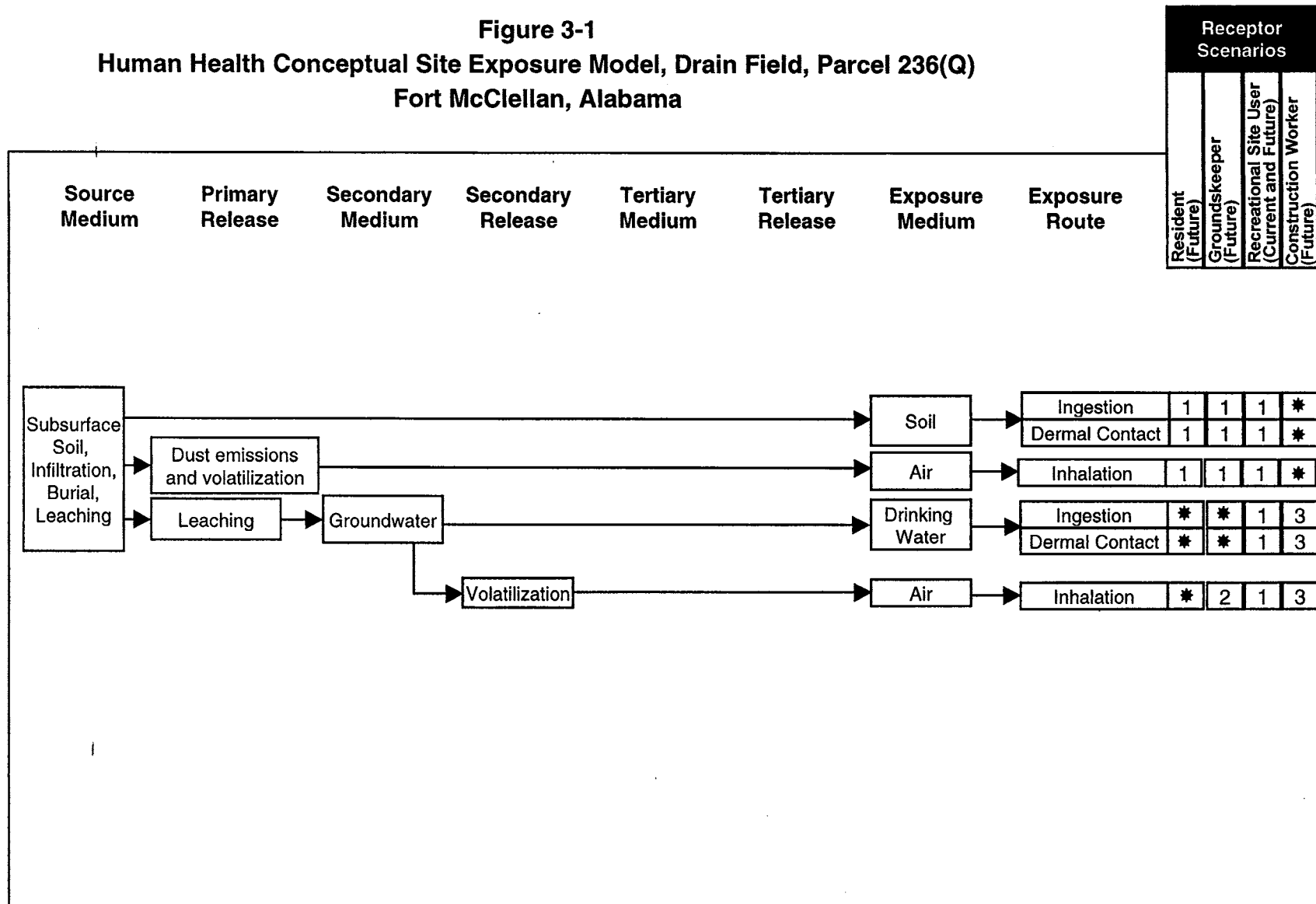
Confirmation of contamination at the Drain Field (Building T-459), Parcel 236(Q), will be based on comparing detected site chemical concentrations with site-specific screening levels and background concentrations developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) is addressed in the installation-wide WP.

3.4.2 Data Types and Quality

Surface, subsurface soil, and groundwater will be sampled and analyzed in order to meet the objectives of the SI at the Drain Field (Building T-459), Parcel 236(Q). Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, including Update III methods where applicable. Samples will be analyzed by EPA-approved

Figure 3-1
Human Health Conceptual Site Exposure Model, Drain Field, Parcel 236(Q)
Fort McClellan, Alabama



Note: Although groundwater is the only media of concern, subsurface soil is a plausible contaminant source and pathway of concern for the construction worker.

* = Complete exposure pathway quantified in SSSL development.

1 = Incomplete exposure pathway.

2 = Although theoretically complete, this pathway is judged to be insignificant.

3 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

The parcel of property being investigated under this SI was identified during the EBS (ESE, 1998) as a site where previous environmental investigations have not been performed and environmental investigation is required. To meet the objectives of Section 1.3 and Chapter 3.0, the environmental sampling program will consist of collecting two surface soil samples, two subsurface soil samples, and two groundwater samples.

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling performed during the SI at the Drain Field (Building T-459), Parcel 236(Q) site will consist of collecting two surface soil samples, two subsurface soil samples, and two groundwater samples for chemical analysis. The placement of the sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample location, media, and rationale are summarized in Table 4-1. The sample will be submitted for laboratory analyses of site related parameters listed in Section 4.5.

4.2.1 Surface Soil Sampling

Two surface soil samples will be collected during the SI at the Drain Field (Building T-459), Parcel 236(Q). Sample locations are downgradient from the drain field.

4.2.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. Two soil samples will be collected at the Drain Field (Building T-459). Surface soil samples will be collected from the upper 1.0 foot of the soil at each sampling location. The proposed surface soil sampling locations are presented on Figure 4-1.

Table 4-1

**Site Sampling Rationale
Drain Field, Building T-459, Parcel 236(Q)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sampling Location Rationale ^a
PPMP-236-GP01	Surface Soils Subsurface Soil Groundwater	Surface soil, subsurface soil, and groundwater samples will be collected from a location in the northwest portion of the parcel. Sampling location represents a downgradient location from the septic system and drain field.
PPMP-236-GP02	Surface Soils Subsurface Soil Groundwater	Surface soil, subsurface soil, and groundwater samples will be collected from a location in the southwest portion of the parcel near the unimproved road. Sampling location represents a downgradient location from septic system and drain field.

^aThe exact sample locations will be determined based on field observation by the IT on-site geologist.

4.2.1.2 Sample Collection

Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Two surface soil samples will be collected using the direct-push procedures specified in Section 4.7.1.1 of the SAP.

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from two soil borings during the SI at the Drain Field (Building T-459), Parcel 236(Q).

4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the two locations shown on Figure 4-1.

Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP (IT, 1998a).

Soil samples will be collected continuously for the first 12 feet bgs or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses.

Collected subsurface soil samples will be field-screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings exceeding background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the soil sample intervals collected indicate elevated levels (above background) using the PID, the deepest sample collected shall be submitted for laboratory analysis.

Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs. Site conditions such as lithology may also determine the actual

Table 4-2

**Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Drain Field, Building T-459, Parcel 236(Q)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-236-GP01	PPMP-236-GP01-SS-KS0001-REG	0-1			PPMP-236-GP01-SS-KS0001-MS	TCL VOCs, TCL SVOCs, Total TAL Metals, CI Pesticides, OP Pesticides, CI Herbicides
	PPMP-236-GP01-DS-KS0002-REG	a			PPMP-236-GP01-SS-KS0001-MSD	
PPMP-236-GP02	PPMP-236-GP02-SS-KS0003-REG	0-1	PPMP-236-GP02-SS-KS0004-FD	PPMP-236-GP02-SS-KS0005-FS		TCL VOCs, TCL SVOCs, Total TAL Metals, CI Pesticides, OP Pesticides, CI Herbicides
	PPMP-236-GP02-DS-KS0006-REG					

*Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

VOC - Volatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

CI - Chlorinated.

OP - Organophosphorus.

sample depth interval submitted for analyses. More than one subsurface soil sample may be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight for determining the existence of any PSSCs. Any additional subsurface samples will be collected at the discretion of the on-site geologist based on field observations.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Groundwater Sampling

Two groundwater samples will be collected from direct-push temporary wells installed in soil borings at the site. A direct-push temporary well will be completed in each of the two soil borings installed as described in Section 4.2.1 to collect a groundwater samples.

4.2.3.1 Sample Locations and Rationale

Groundwater samples will be collected from direct-push temporary wells completed in two of the soil borings installed at the site.

The locations where groundwater samples will be collected are shown on Figure 4-1.

Groundwater sampling rationale is presented in Table 4-1. The groundwater sample designations and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.3.2 Sample Collection

Groundwater samples will be collected in accordance with the procedures specified in Section 4.7.1.1 of the SAP. Direct-push temporary wells will be completed in soil borings advanced to the water table (at a depth where sufficient water is encountered) in the soil borings to collect the groundwater samples.

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities
Drain Field, Building T-459, Parcel 236(Q)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-236-GP01	PPMP-236-GP01-GW-KS3001-REG	^a	PPMP-236-GP01-GW-KS3002-FD	PPMP-138-GP01-GW-KS3003-FS	PPMP-236-GP01-GW-KS3001-MS PPMP-236-GP01-GW-KS3001-MSD	TCL VOCs, TCL SVOCs Total TAL Metals CI Pesticides, OP Pesticides CI Herbicides
PPMP-236-GP02	PPMP-236-GP02-GW-KS3004-REG	^a				TCL VOCs, TCL SVOCs Total TAL Metals CI Pesticides, OP Pesticides CI Herbicides

^a Actual groundwater sample depth will depend on where sufficient first water is encountered to collect a groundwater sample.

CL- Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.

OP- Organophosphorous.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

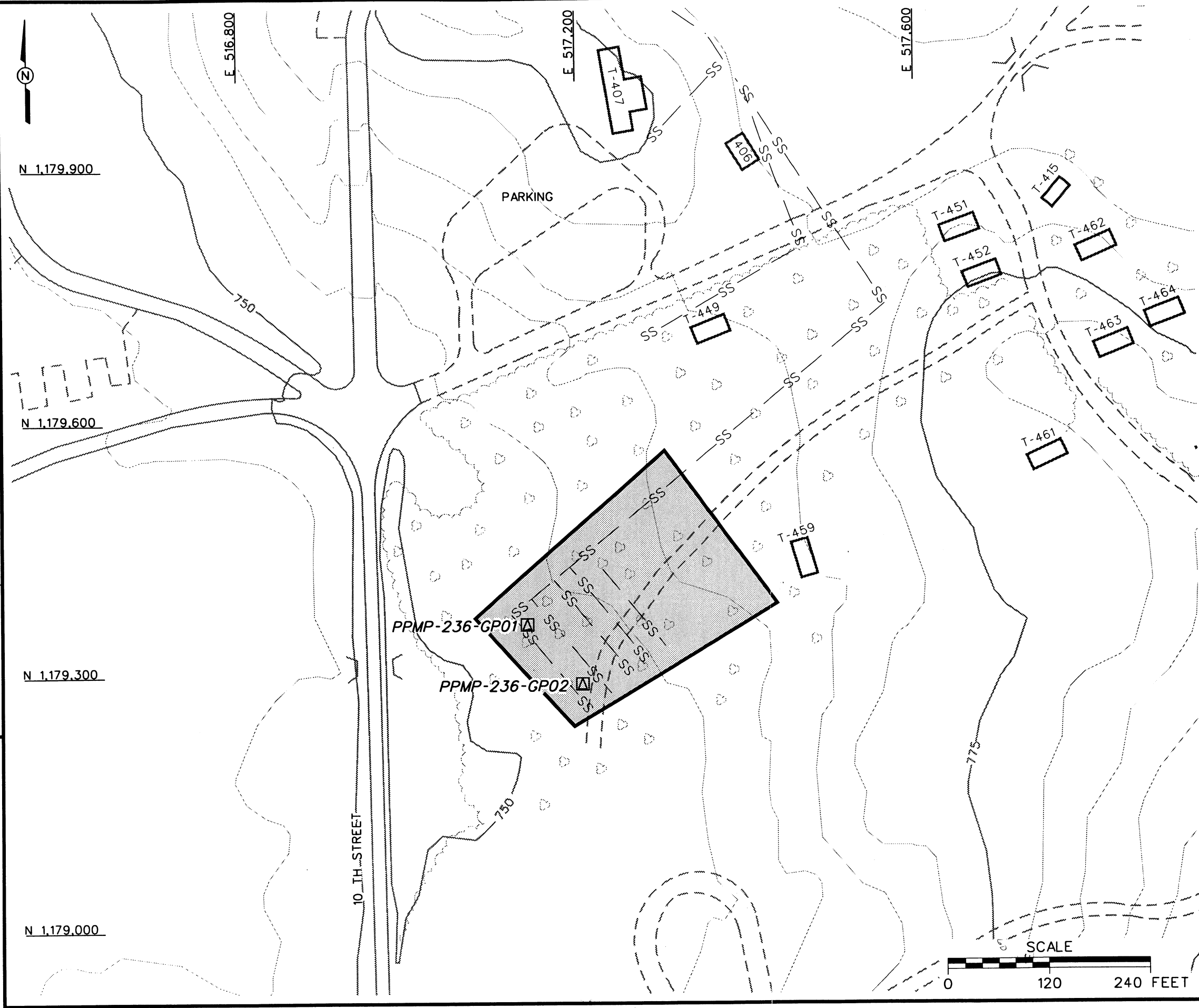


FIGURE 4-1
PROPOSED SAMPLE LOCATION
DRAIN FIELD
PARCEL 236(Q)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998c).

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either GPS or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 feet for elevation, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitor well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998c).

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

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Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP. —

4.5 Analytical Program

Samples collected at the location specified in Chapter 4.0 will be analyzed for various physical and chemical properties. The on-site sample coordinator will provide sampling containers, preservatives, and will coordinate sampling procedures with the field sampling crews in accordance with Table 5-1 in the QAP. The specific suite of analyses to be performed is based on the potential site-specific chemicals historically at the site and EPA, ADEM, FTMC, and USACE requirements. Target analyses for the sample collected from the Drain Field (Building T-459), Parcel 236(Q), include the following list of parameters:

- Target compound list (TCL) VOCs - Method 5035/8260B
- TCL semivolatile organic compound - Method 8270C
- Target analyte list metals - Method 6010B/7000
- Chlorinated pesticides - Method 8081A
- Organophosphorus pesticides - Method 8141A
- Chlorinated herbicides - Method 8151A.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow requirements specified in Section 4.13.2 of the SAP (IT, 1998a).

Completed analysis request/chain of custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Table 4-4

**Analytical Samples - Drain Field, Building T-459, Parcel 236(Q)
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Drain Field, Bldng T-459 - Parcel 236(Q): 2 water matrix (2 groundwater) 4 soil matrix (2 surface soil and 2 subsurface soil).													
TCL VOCs	8260B	water	normal	2	1	2	1	1	1	1	1	7	1
TCL SVOCs	8270C	water	normal	2	1	2	1	1	1		1	6	1
Total TAL Metals	6010B/7000	water	normal	2	1	2	1	1	1		1	6	1
CL Pesticides	8081A	water	normal	2	1	2	1	1	1		1	6	1
OP Pesticides	8141A	water	normal	2	1	2	1	1	1		1	6	1
CI Herbicides	8151A	water	normal	2	1	2	1	1	1		1	6	1
TCL VOCs	8260B	soil	normal	4	1	4	1	1	1		1	8	1
TCL SVOCs	8270C	soil	normal	4	1	4	1	1	1	1	1	9	1
Total TAL Metals	6010B/7000	soil	normal	4	1	4	1	1	1		1	8	1
CL Pesticides	8081A	soil	normal	4	1	4	1	1	1		1	8	1
OP Pesticides	8141A	soil	normal	4	1	4	1	1	1		1	8	1
CI Herbicides	8151A	soil	normal	4	1	4	1	1	1		1	8	1
Drain Field, Building T-459 Subtotal:				36		12		12	12	2	12	86	12

^aField duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number.

Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed 4 field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than one week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

CI - Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.

OP - Organophosphorus.

PCB - Polychlorinated biphenyl.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

USACE - U.S. Army Corps of Engineers.

VOC - Volatile organic compound.

Field split samples collected for USACE will be shipped to:

Sample Receiving
Attn: USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia 30060
Telephone: (770) 919-5270.

4.7 Investigation-Derived Waste Management and Disposal

Investigation-derived waste (IDW) will be managed and disposed of as outlined in Appendix D of the SAP. The IDW expected to be generated from the field sampling at FTMC will consist of purge water from temporary well sampling activities, decontamination fluids, spent well materials, and personal protective equipment (PPE). IDW will be stored in the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

4.8 Site-Specific Safety and Health

Health and safety requirements for this SI are provided in the SSHP attachment for the Drain Field (Building T-459), Parcel 236(Q). The SSHP attachment will be used in conjunction with the SHP.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science and Engineering, Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998c, Letter to Ellis Pope from Jeanne Yacoub, "Procedures for Temporary Residuum Monitoring Well Installation, Conversion, and Abandonment," November, 1998.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Modification No. 1, Site Investigations at Fort McClellan, Alabama, Including Ecological Screening Sites (Creeks and Tribes), and Removal of Indoor Firing Ranges*, May.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund Interim Final Guidance*, EPA 540-R-93-071, September.

U.S. Environmental Protection Agency (EPA), 1990, *Installation Assessment, Army Closure Program, Fort McClellan, Anniston, Alabama (TS-PIC-89334)*, Environmental Photographic Interpretation Center, Environmental Monitoring Systems Laboratory.